

## DECLARATION

In the matter of  
U.S. Serial No. 10/540,944  
in the name of Takao WATANABE

I, the undersigned, Kazuhiko Oshima, of Fujimoto Patent and Law Office, of KA111 Building 5F, 1-1, Kandaawaji-cho 1-chome, Chiyoda-ku, Tokyo, Japan, do solemnly and sincerely declare as follows:

1. That I am well acquainted with the English and Japanese languages and am competent to translate Japanese into English and vice versa.
2. That I have executed, with the best of my ability, true and correct translations to the attached copy of the complete description, claims, drawings and an abstract originally filed as Japanese Patent Application No. 2003-003755.

This 7th day of May, 2009

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[NAME OF DOCUMENT] SPECIFICATION

[TITLE OF THE INVENTION] THIN DESIGN DISPLAY APPARATUS

[SCOPE OF CLAIM FOR PATENT]

[CLAIM 1] A thin design display apparatus comprising:

5 a display unit for displaying information;

a stand pillar portion for supporting the display unit;

and

a joint portion for joining the display unit with the stand pillar portion, the joint portion being able to be 10 inserted to and removed from the stand pillar portion,

wherein the display apparatus can be used in a first usage mode in which the display unit is used by inserting the joint portion to the stand pillar portion, and

wherein the display apparatus can be used in a second 15 usage mode in which the joint portion is separated from the stand pillar portion and used as a stand for supporting the display unit.

[CLAIM 2] The thin design display apparatus according to Claim 1, wherein the joint portion has a rotational joint 20 portion which can rotate so as to control an angle of elevation of the display unit.

[CLAIM 3] The thin design display apparatus according to Claim 2, wherein the rotational joint portion projects down below a bottom side of the thin design display apparatus 25 in a state that the rotational joint portion is located

approximately parallel to a display surface of the display unit by rotating.

5 [CLAIM 4] The thin design display apparatus according to Claim 2 or Claim 3, wherein a longitudinal direction of a cross section of the rotational joint portion is an axis direction of a rotation direction of the rotational joint portion.

10 [CLAIM 5] The thin design display apparatus according to Claim 2 or Claim 3, wherein a cross section of the rotational joint portion is circular.

15 [CLAIM 6] The thin design display apparatus according to any one of Claims 2-5, wherein by rotating the rotational joint portion about the rotational part, the rotational joint portion can be prevented from projecting from an outline of the display apparatus when viewed from a front of the display unit.

20 [CLAIM 7] The thin design display apparatus according to any one of Claims 1-6, wherein the stand pillar portion has a stand pillar which fits the joint portion, and a stand base on which the stand pillar is provided upright,

wherein the stand pillar is rotatable relative to the stand base, and

25 wherein the stand pillar rotates relative to the stand base in accordance with a rotation of the display unit in a horizontal direction.

[CLAIM 8] The thin design display apparatus according to any one of Claims 1-7, wherein the joint portion has a holder for holding a remote controller for remote controlling the display unit.

5 [CLAIM 9] The thin design display apparatus according to any one of Claims 1-8, wherein the joint portion has a fixture portion to be fixed to the display unit and a grip handle positioned above the fixture portion.

10 [CLAIM 10] The thin design display apparatus according to Claim 9, wherein the grip handle has an annular configuration portion.

15 [CLAIM 11] The thin design display apparatus according to Claim 9 or Claim 10, wherein the grip handle has an inclination in which direction the grip handle goes away from the display unit while extending toward a distal end of the grip handle from the fixture portion when viewed from the side of the display unit being stopped.

20 [CLAIM 12] The thin design display apparatus according to any one of Claims 9-11, wherein an imaginary plane including a most outer surface of the end portion of the grip handle and a most outer surface of a rotational portion of the rotational joint portion is approximately parallel to a display surface of the display unit.

25 [CLAIM 13] The thin design display apparatus according to any one of Claims 9-12, further comprising a pair of

semicircular speaker portions on the left and right of the display unit,

wherein the annular shape of the grip handle is formed similar to the speakers, projecting above the display unit when viewed from the front of the display.

5 [CLAIM 14] The thin design display apparatus according to any one of Claims 1-13, wherein the display apparatus incorporates a battery in a lower side.

[CLAIM 15] A thin design display apparatus comprising:

10 a display unit for displaying information; and

a rotational joint portion which can rotate so as to control an angle of elevation of the display unit,

15 wherein the rotational joint portion projects down below a bottom side of the thin design display apparatus in a state that the rotational joint portion is located approximately parallel to a display surface of the display unit by rotating.

[CLAIM 16] A thin design display apparatus comprising:

20 a display unit for displaying information;

a rotational joint portion which can rotate so as to control an angle of elevation of the display unit; and

25 a grip handle for carriage and the like of the thin design display apparatus,

wherein the rotational joint portion projects down below a bottom side of the thin design display apparatus in a state that the rotational joint portion is located approximately

parallel to a display surface of the display unit by rotating.

[CLAIM 17] A thin design display apparatus comprising:

a display unit for displaying information;

a rotational joint portion which can rotate so as to  
5 control an angle of elevation of the display unit;

a grip handle for carriage and the like of the thin design  
display apparatus; and

a fixture portion for fixing the display unit,

wherein the fixture portion is formed integrally with

10 the rotational joint portion and/or the grip handle, and

wherein the rotational joint portion projects down below  
a bottom side of the thin design display apparatus in a state  
that the rotational joint portion is located approximately  
parallel to a display surface of the display unit by rotating.

15 [CLAIM 18] The thin design display apparatus according  
to Claim 16 or 17, wherein a display unit upper side portion  
of the grip handle is formed into an annular configuration.

20 [CLAIM 19] The thin design display apparatus according  
to any one of Claims 16-18, wherein the grip handle has an  
inclination in which direction the grip handle goes away from  
the display unit while extending toward a distal end of the  
grip handle from the fixture portion when viewed from the  
side of the stopping display unit.

25 [CLAIM 20] The thin design display apparatus according  
to any one of Claims 16-19, wherein an imaginary plane including

a most outer surface of the end portion of the grip handle and a most outer surface of a rotational portion of the rotational joint portion is approximately parallel to a display surface of the display unit.

5 [CLAIM 21] The thin design display apparatus according to any one of Claims 16-20, further comprising a pair of semicircular speaker portions on the left and right of the display unit,

10 wherein the annular shape of the grip handle is formed similar to the speakers, projecting above the display unit when viewed from the front of the display.

15 [CLAIM 22] The thin design display apparatus according to any one of Claims 15-21, wherein by rotating, the rotational joint portion can be prevented from projecting from an outline of the display apparatus when viewed from a front of the display unit.

[CLAIM 23] The thin design display apparatus according to any one of Claims 15-22, wherein the display apparatus incorporates a battery in a lower side.

20 [DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[Technical Field of the Invention]

25 The present invention relates to a display apparatus that can be used in various usage modes such that the display is mounted with a stand pillar or without the stand pillar

or is used in a wall-mounted position.

[0002]

[Prior Art]

Conventional television using cathode ray tube have been used resting on a TV-mounting rack or case that is able to bear the weight of the television set, in order to support the TV screen at a predetermined height that meets the level and direction of the viewer's viewpoint.

[0003]

Recently the use of thin design televisions using liquid crystal displays, plasma displays and the like has become widespread instead of CRT type displays. In the case of a CRT television, in order to keep it at a predetermined height, taking into account the ease of watching, it is necessary to use a steady TV-mounting rack, case, table or the like because of its heavy weight. On the other hand, since the thin design television is provided as a light-weight configuration as it becomes thin, it is possible to use a leg-like stand for supporting the thin design television similar to the stand for a fluorescent lamp, for example, instead of the conventional TV-mounting rack, case, table and the like. This configuration has the advantage of reducing the area for placement (see the patent literature 1, for example).

[0004]

Also, the development into a thin and lightweight configuration promotes ease of relocation: for example, a system made up of a battery driven monitor unit and a base unit for transmitting video information to the monitor unit 5 is disclosed in a patent literature 2 and others, in which the battery for driving the monitor unit is chargeable and the monitor unit can also be used during charging.

[0005]

In this patent literature 2, the monitor unit is 10 constructed such that the battery and a retractable stand are arranged on the backside while a groove with a charging terminal is formed at the bottom face. Additionally, in the base unit a charging terminal is formed in a holding rail, and when the battery is charged, the monitor unit with the 15 stand housed into its stand housing slot is stood against the front of the base station so as to bring the charging terminals into contact with each other to allow for charging of the battery.

[0006]

Further, as the stand having a grip handle for carriage, 20 a stand similar to that used for an electric fan, for example, can be used, this also provides the advantage of reducing the area of placement.

[0007]

25 FIGS. 18 to 21 show a conventional stand type thin design

television (using a liquid crystal display) with a grip handle. This conventional stand type thin design television comprises a main body 101 having a display screen and the like, a stand pillar 102, a stand base 103 and a joint body 104.

5 [0008]

FIG. 19 is a side view showing one step for assembly of the stand type thin design television, wherein main body 101 and joint body 104 are integrated with screws etc., and stand pillar 102 and stand base 103 are also integrated with screws etc., then joint body 104 and stand pillar 102 are fitted to each other so that joint body 104 will be fixed and fastened so as to be rotatable with respect to stand pillar 102.

10 [0009]

15 Referring to FIG. 20, the fitting between the joint body 104 and pillar 102 will be described in detail.

20 [0010]

FIG. 20 is a side view showing the parts before these elements are fitted, in particular showing a cutaway representation of the fitting portion. As shown in FIG. 20, joint body 104 has a fitting part 105 at the fitting portion while stand pillar 102 has a fitting socket part 106 at the fitting portion. These parts 105 and 106 are attached in an integrated manner to joint body 104 and stand pillar 102, respectively. Fitting part 105 and fitting socket part 106

are formed so as to rotatably engage each other. Fitting part 105 is also formed with a slot 108 that screw fits a bolt 107. Formed at the bottom of fitting socket part 106 is a hole that allows bolt 107 to pass therethrough in the axial 5 direction.

[0011]

For attachment between joint body 104 and stand pillar 102, fitting part 105 of joint body 104 is fitted first into fitting socket part 106 of stand pillar 102. It should be 10 added that stand pillar 102 and stand base 103 are hollow, forming a connected interior space in these elements. As shown in FIG. 20, bolt 107 is inserted from the bottom of stand base 103, passed through fitting socket part 106 and screwed into slot 108 of fitting metal 105, whereby fitting part 105 15 and fitting socket part 106 are secured and fixed so as to be rotatable on the same axis. Thus, attachment between joint body 104 and stand pillar 102 in the above way makes the display screen of main body 101 rotatable and adjustable for horizontally direction with respect to stand pillar 102 while 20 rotation of a rotational axis 104a of joint body 104 makes the display screen of main body 101 adjustable for angle of elevation.

[0012]

[Patent literature 1]

[Patent literature 2]

Japanese Patent Application Laid-open 2002-171461

[0013]

[Problems to be Solved by the Invention]

5 It is true that the development of thin design televisions into thin and lightweight configurations enables easy carrying indoors and in other locations, but since, upon practical carriage, the monitor unit described in the patent literature 1 is carried about by grasping the stand portion, or the  
10 above-described stand type thin design television with the grip handle is transported by carrying main body 101 to stand base 103 as a whole, transportation still entails trouble when the apparatus is transported to a place, for example, the top of a table or the like, where stand pillar 102 is  
15 no longer necessary for matching its height to that of viewer's viewpoint or to a narrow mounting space where stand base 103 is a hindrance. Therefore, there have been demands for more versatile thin design televisions, which are less limited by the installation place.

20 [0014]

In the system of the monitor unit and base unit disclosed in patent literature 2, it is impossible to adjust the angle of the display screen when the monitor is mounted on the base unit, and if an angular adjusting function with respect to  
25 the angle of elevation and in the horizontal plane is devised,

it needs a complex structure.

[0015]

The present invention has been devised in order to solve the above problems, it is therefore an object of the present 5 invention to provide an easy-to-use thin design display apparatus, whereby its display unit is easily attachable and detachable from the stand structure and can be easily carried about, and the place of installation of the display unit is not limited, the angle of elevation and the horizontal angle 10 of the display screen can be adjusted when the display is set on the stand structure.

[0016]

[Means for Solving the Problems]

In order to achieve the above object, the present 15 invention has the following configurations.

The first aspect of the present invention is characterized by a display unit for displaying information; a stand pillar portion for supporting the display unit; and a joint portion for joining the display unit with the stand 20 pillar portion, the joint portion being able to be inserted to and removed from the stand pillar portion, wherein the display apparatus can be used in a first usage mode in which the display unit is used by inserting the joint portion to the stand pillar portion, and wherein the display apparatus 25 can be used in a second usage mode in which the joint portion

is separated from the stand pillar portion and used as a stand for supporting the display unit.

[0017]

According to the first aspect of the present invention,  
5 the display apparatus can be used in the first usage mode in which the display unit is used by using the stand pillar portion and in the second usage mode in which the display unit is used by separating the joint portion from the stand pillar portion. Since the joint portion separated from the  
10 stand pillar portion in the second usage mode also is usable as a supporting stand that is able to control the angle of elevation of the display unit, the display apparatus can be set at another location without taking into account the space for the stand pillar portion, hence providing comfort when  
15 watching by adjusting the angle with respect to the elevation direction.

[0018]

The second aspect of the present invention is characterized in that the joint portion has a rotational joint portion which can rotate so as to control an angle of elevation  
20 of the display unit.

[0019]

According to the second aspect of the present invention, since having the rotational joint portion which can rotate  
25 so as to control an angle of elevation of the display unit,

similarly, the display apparatus can be set at another location without taking into account the space for the stand pillar portion, hence providing comfort when watching by adjusting the angle with respect to the elevation direction.

5 [0020]

The third aspect of the present invention is characterized in that the rotational joint portion projects down below a bottom side of the thin design display apparatus in a state that the rotational joint portion is located 10 approximately parallel to a display surface of the display unit by rotating.

[0021]

According to the third aspect of the present invention, since the rotational joint portion projects down below a bottom 15 side of the thin design display apparatus, the display unit can be stably and securely supported by the rotational joint portion.

[0022]

The fourth aspect of the present invention is characterized in that a longitudinal direction of a cross 20 section of the rotational joint portion is an axis direction of a rotation direction of the rotational joint portion.

[0023]

According to the fourth aspect of the present invention, 25 since a greater area of the rotational joint portion can be

put in contact with the ground, the stability of the display apparatus, especially against the inclination to the left or right, can be enhanced when the display unit is supported by the joint portion.

5 [0024]

The fifth aspect of the present invention is characterized in that a cross section of the rotational joint portion is circular.

[0025]

10 According to the fifth aspect of the present invention, since the cross section of the rotational joint portion is circular, it is possible to obtain a display purn (sic) function by providing a fitting column slot in the stand pillar portion.

[0026]

15 The sixth aspect of the present invention is characterized in that by rotating the rotational joint portion about the rotational part, the rotational joint portion can be put inside an outline of the display apparatus when viewed from a front of the display unit.

20 [0027]

According to the sixth aspect of the present invention, when the display unit is used in a wall-mounted position, the display unit can be positioned closer to the wall and the like, and it is possible to avoid the supporting stand being exposed beyond the outer frame of the display unit.

Also, it is possible to control of the angle of elevation of the display unit by adjusting the angle of the supporting stand.

[0028]

5 The seventh aspect of the present invention is characterized in that the stand pillar portion has a stand pillar which fits the joint portion, and a stand base on which the stand pillar is provided upright, wherein the stand pillar is rotatable relative to the stand base, and wherein the 10 stand pillar rotates relative to the stand base in accordance with a rotation of the display unit in a horizontal direction.

[0029]

According to the seventh aspect of the present invention, even if the longitudinal direction of the cross section of 15 the rotational joint portion is an axis direction of the rotation direction of the rotational joint portion, it is possible to secure the rotation of the display unit with respect to the horizontal direction.

[0030]

20 The eighth aspect of the present invention is characterized in that the joint portion has a holder for holding a remote controller for remote controlling the display unit.

[0031]

According to the eighth aspect of the present invention, 25 since the holder is arranged on the joint portion, it is possible

to prevent the remote controller from being left behind or from being lost even if the display unit is separated from the stand pillar portion and carried freely.

[0032]

5 The ninth aspect of the present invention is characterized in that the joint portion has a fixture portion to be fixed to the display unit and a grip handle positioned above the fixture portion.

[0033]

10 According to the ninth aspect of the present invention, since having the grip handle, it is possible to make carriage of the thin design display apparatus easy.

[0034]

15 The tenth aspect of the present invention is characterized in that the grip handle has an annular configuration portion.

[0035]

20 According to the tenth aspect of the present invention, since an annular configuration of the grip handle engages with a projection, hook or the like stably, the display unit can be used as a stable wall-mounted TV.

[0036]

25 The eleventh aspect of the present invention is characterized in that the grip handle has an inclination in which direction the grip handle goes away from the display

unit while extending toward a distal end of the grip handle from the fixture portion when viewed from the side of the display unit being stopped.

[0037]

5 According to the eleventh aspect of the present invention, since the grip handle is formed to go away from the display unit while extending upward, it is possible to make a grip easy when transporting, and the tolerance also can be given to the length of the projection.

10 [0038]

The twelfth aspect of the present invention is characterized in that an imaginary plane including a most outer surface of the end portion of the grip handle and a most outer surface of a rotational portion of the rotational 15 joint portion is approximately parallel to a display screen of the display unit.

[0039]

According to the twelfth aspect of the present invention, the display screen can be set parallel to a wall surface stably 20 in the wall-mounted state, hence providing stable watching.

[0040]

The thirteenth aspect of the present invention is characterized by a pair of semicircular speaker portions on the left and right of the display unit, wherein the 25 annular shape of the grip handle is formed similar to the

speakers, projecting above the display unit when viewed from the front of the display.

[0041]

According to the thirteenth aspect of the present invention, since the annular shape of the grip handle is formed similar to the speakers, projecting above the display unit when viewed from the front of the display, it is possible to provide balance and stylishness from a design viewpoint and also enhance strength by virtue of its curvature.

10 [0042]

The fourteenth aspect of the present invention is characterized in that the display apparatus incorporates a battery in a lower side.

[0043]

15 According to the fourteenth aspect of the present invention, disposition of a heavy battery at the lower part of display unit enhances the stability of the orientation and placement of display apparatus. Further, it is also convenient in a configuration where the battery is replaced 20 by rotating the unit upside down while the display apparatus is set on the stand pillar. This feature is particularly advantageous when a battery into which battery liquid should be charged, such as a fuel cell is used.

[0044]

25 The fifteenth aspect of the present invention is

characterized by a display unit for displaying information; and a rotational joint portion which can rotate so as to control an angle of elevation of the display unit, wherein the rotational joint portion projects below a bottom of the thin design display apparatus in a state that the rotational joint portion is located approximately parallel to a display surface of the display unit by rotating.

5 [0045]

According to the fifteenth aspect of the present invention, the rotational joint portion is specified to have such a length as to project below the bottom of the thin type display apparatus, the display unit can be stably and securely supported by the rotational joint portion.

10 [0046]

15 The sixteenth aspect of the present invention is characterized by a display unit for displaying information; a rotational joint portion which can rotate so as to control an angle of elevation of the display unit; and a grip handle for carriage and the like of the thin design display apparatus, wherein the rotational joint portion projects down below a bottom side of the thin design display apparatus in a state that the rotational joint portion is located approximately parallel to a display surface of the display unit by rotating.

20 [0047]

25 According to the sixteenth aspect of the present

invention, it is possible to make carriage easy by providing the grip handle. Since the rotational joint portion is specified to have such a length as to project below the bottom of the thin type display apparatus, it is possible to support 5 the display in a stable manner by the rotational joint portion.

[0048]

The seventeenth aspect of the present invention is characterized by a display unit for displaying information; a rotational joint portion which can rotate so as to control 10 an angle of elevation of the display unit; a grip handle for carriage and the like of the thin design display apparatus; and a fixture portion for fixing the display unit, wherein the fixture portion is formed integrally with the rotational joint portion and/or the grip handle, and wherein the 15 rotational joint portion projects down below a bottom side of the thin design display apparatus in a state that the rotational joint portion is located approximately parallel to a display surface of the display unit by rotating.

[0049]

20 According to the seventeenth aspect of the present invention, since the rotational joint portion and fixture portion; the grip handle and fixture portion; or the rotational joint portion, fixture portion and the grip handle are formed integrally, the assemblage of the thin type display apparatus 25 becomes easy and it is possible to securely support the thin

type display apparatus in a stable manner.

[0050]

The eighteenth aspect of the present invention is characterized in that a display unit upper side portion of 5 the grip handle is formed into an annular configuration.

[0051]

According to the eighteenth aspect of the present invention, since an annular configuration of the grip handle engages with a projection, hook or the like stably, the display 10 unit can be used as a stable wall-mounted TV.

[0052]

The nineteenth aspect of the present invention is characterized in that the grip handle has an inclination in which direction the grip handle goes away from the display 15 unit while extending toward a distal end of the grip handle from the fixture portion when viewed from the side of the stopping display unit.

[0053]

According to the nineteenth aspect of the present invention, since the grip handle is formed to go away from 20 the display unit while extending upward, it is possible to make a grip easy when transporting, and the tolerance also can be given to the length of the projection.

[0054]

25 The twentieth aspect of the present invention is

characterized in that an imaginary plane including a most outer surface of the end portion of the grip handle and a most outer surface of a rotational portion of the rotational joint portion is approximately parallel to a display surface of the display unit.

5

[0055]

According to the twentieth aspect of the present invention, the display screen can be set parallel to a wall surface stably in the wall-mounted state, hence providing

10 stable watching.

[0056]

The twenty-first aspect of the present invention is characterized by a pair of semicircular speaker portions on the left and right of the display unit, wherein the annular shape of the grip handle is formed similar to the speakers, projecting above the display unit when viewed from the front of the display.

15

[0057]

According to the twenty-first aspect of the present invention, since the annular shape of the grip handle is formed similar to the speakers, projecting above the display unit when viewed from the front of the display, it is possible to provide balance and stylishness from a design viewpoint and also enhance strength by virtue of its curvature.

20

[0058]

The twenty-second aspect of the present invention is characterized in that by rotating, the rotational joint portion can be prevented from projecting from an outline of the display apparatus when viewed from a front of the display unit.

5

[0059]

According to the twenty-second aspect of the present invention, when the display unit is used in a wall-mounted position, the display unit can be positioned closer to the wall and the like, and it is possible to avoid the supporting stand being exposed beyond the outer frame of the display unit. Also, it is possible to control of the angle of elevation of the display unit by adjusting the angle of the supporting stand.

10

[0060]

The twenty-third aspect of the present invention is characterized in that the display apparatus incorporates a battery in a lower side.

15

[0061]

According to the twenty-third aspect of the present invention, disposition of a heavy battery at the lower part of display unit enhances the stability of the orientation and placement of display apparatus. Further, it is also convenient in a configuration where the battery is replaced by rotating the unit upside down while the display apparatus

20

25

is set on the stand pillar. This feature is particularly advantageous when a battery into which battery liquid should be charged, such as a fuel cell is used.

[0062]

5 [Embodiment of the Invention]

[The first embodiment]

The first embodiment of the present invention will be described in detail with reference to the drawings.

FIG. 1 is a front view of a stand type thin design television according to the present embodiment. Here, the embodiment is described taking an example of a liquid crystal display as a display unit 1 for displaying information such as video, images and the like. However, various kinds of thin type display devices such as plasma displays, organic EL (electro luminescence) and others can also be employed.

10 [0063]

The stand type thin design television includes a display unit 1, a joint body 15, a stand pillar 25 and a stand base 29. Joint body 15 is constructed such that it is attached to display unit 1 and also attached detachably to pillar 25 fixed to stand base 29, and in the first usage mode where stand pillar 25 and stand base 29 are used, joint body 15 is fitted into stand pillar 25 so that stand/pillar structure 30 supports display unit 1 while in the second usage mode where stand pillar 25 and stand base 29 are not used, joint

body 15 itself is used as a stand.

[0064]

Since joint body 15 and stand pillar 25 can be joined to and separated from each other as above, it is possible to easily change mode between the first and second usage modes. Since joint body 15 is formed so as to be also usable as a stand, switch between the first and second usage modes can be realized with a simple configuration. Next, each component will be described in detail.

10 [0065]

[Display unit]

To begin with, display unit 1 will be described with reference to FIGS. 1 to 3.

15 Display unit 1 includes: an approximately rectangular front frame 1a; a liquid crystal display 3 for displaying video, images, etc., in the front frame 1; speakers 5 for sound output; a backside cover 7 (FIG. 2); a TV tuner 9 (FIG. 2) provided inside; a detachable chargeable battery 11 for power supply (FIG. 2); and a base rail 13 (FIG. 2) formed 20 at the bottom. Display unit 1 can be driven by either battery 11 or an unillustrated a.c., power supply.

25 [0066]

Liquid crystal display 3 is able to display video (including video and image from TV phones) received by TV tuner 9; video and image (including motion pictures, still

5 pictures) recorded on and read out from recording media such as, for example, disk media including DVD, MD, CD, FD and the like and semiconductor memories; and information such as video, images, text, code, etc., from the internet.

5 [0067]

10 Speakers 5 are arranged on both the left and right sides at upper positions of front frame 1a and shaped in semicircular forms similar to the shape of an aftermentioned handle 17 of joint body 15, which looks arch-like (annular) above front frame 1a, providing balance and stylishness from a design viewpoint and also enhancing strength by virtue of its curvature.

15 [0068]

20 Battery 11 (FIG. 2) is disposed in the lower part of display unit 1 (at the side closer to stand base 29), is set and unset by opening door 11a provided in the lower part of backside cover 7 as shown in FIG. 3. Disposition of a heavy part, i.e., battery 11, at the lower part of display unit 1 enhances the stability of the orientation and placement of display unit 1.

25 [0069]

25 Base rail 13 functions as a rail for placement of display unit 1 when display unit 1 is separated from stand pillar 25 and stand base 29 and is provided in the bottom face of display unit 1 (on the side close to stand base 29). This

can be formed of a material having a non-skid effect, such as rubber, silicone, and the like. The rail is formed in a curved (approximately arced) rail-like (projected) form (having a center on the display unit side 1) with a length 5 that permits appropriate setting even if the angle of elevation of display unit 1 is changed. Base rail 13 can be provided with a predetermined length at the bottom of display unit 1, at one or more places so as to present the above operational effect. When a plurality of rails each having a narrower width 10 are provided in parallel to each other, it is possible to realize the aforementioned operational effect even with a lower amount of material.

[0070]

[Joint body 15]

15 Next, joint body 15 will be described with reference to FIGS. 1 to 3.

Joint body 15 has a ring-like form, including a grip handle 17, a fixing portion 19 to be fixed to backside cover 7 of the display unit 1, an approximately bar-shaped stand-cum-joint 23, and a first pivot 21 for supporting the stand-cum-joint 23 in a rotatable manner. 20

[0071]

Grip handle 17 has an arched (annular) form having a non-skid member 17a made of non-skid rubber, silicone, and 25 the like formed in an arc on the inner side thereof (FIG.

1).

[0072]

Grip handle 17 also plays the roles of a structure that can be engaged with a projection, e.g., a hook 33, formed on a wall 31 etc., as shown in FIG. 6. Since the thickness of first pivot 21 or stand-cum-joint 23 (in the front frame 1a-backside cover 7 direction D) is greater than that of the fixing portion 19, grip handle 17 is formed obliquely to fixing portion 19 so as to go away from display unit 1 while going away from fixing portion 19, as shown in FIG. 2. More specifically, with respect to the thickness direction D, the position or the depth dimension of the engaging portion (top part of the arc) of grip handle 17 engaged with hook 31 is formed to be approximately equal to the depth dimension of first pivot 21 or stand-cum-joint 23, whereby grip handle 17 can be positioned closer to wall 31 so that it can be engaged with a hook 31 that is less projected from wall 31 and so that the display surface of liquid crystal display 3 is set approximately parallel to the wall 31 face when the display is wall mounted.

[0073]

Fixing portion 19 is fixed through backside cover 7 of display unit 1 to the interior chassis by screws.

[0074]

First pivot 21 is positioned at a height lower than the

midpoint of display unit 1 with respect to the vertical direction H, so as to broaden the angle adjustable range upwards, meeting usage conditions. Also, first pivot 21 holds stand-cum-joint 23 with a strength which keeps the posture of display unit 1 at the set position after a rotation with respect to the direction X of the elevation angle.

5 [0075]

Stand-cum-joint 23 is a structure having a circular cross-section (either solid column or cylinder), including: a rotational part 23a that is rotatably held on first pivot 21, disposed at the proximal end; and a non-skid/cushioning member 23b for skid prevention and cushioning function, formed of rubber, silicone or the like, at the distal end or at the end opposite to the rotational part 23a.

10 15 [0076]

As shown in FIG. 2, the longitudinal distance (the distance with respect to the direction from the proximal end to the distal end) of the stand-cum-joint 23 is specified so that, with the length of stand-cum-joint 23 set parallel to liquid crystal display 3, its distal end is located to extend equal to or beyond the bottom side 1b of front frame 1a of display unit 1. In the present embodiment, the distance to bottom side 1b of front frame 1a of display unit 1 is 113 mm and the projected amount from bottom side 1b is about 19 mm. Accordingly, as shown in FIG. 1 which is the front view

of the state of FIG. 2(b), stand-cum-joint 23 has a length extended downwards below the base side 1b of front frame 1a.

[0077]

The reasons for the above configuration are described 5 below:

(1) In a case of a liquid crystal display as a typical example of a thin type display device, referring to the tilt angle, in particular, liquid crystal displays have the viewing angle problem, and the tilt angle needs to be able to deal with 10 all usage situations such as when a viewer may watch the liquid crystal display while sprawled, and other cases. To deal with such situations, when stand-cum-joint 23 is used in the second usage mode, i.e., as the supporting stand for display unit 1, it is significantly important that the length of the 15 supporting stand is specified to project below the bottom side of the display portion when the supporting stand is set approximately parallel to the display unit. This setting of the length of projection permits great flexibility of the variable angle range.

20 [0078]

From a viewpoint of installation space, it is necessary to secure a large tilt angle in a narrow space. For this purpose, it is desired that the joined position of stand-cum-joint 23 is formed at a position as low as possible on the display 25 unit.

[0079]

When the joined position is arranged at a lower position of the display unit, and when the supporting stand as it is set parallel to the display unit, projects slightly below the bottom side of the display portion, it is possible to obtain a large tilt angle in a narrow space.

5

[0080]

(2) In a case of a thin type display device, wall-mounting is one of the features, and for wall-mounting, the display 10 device has the advantage that the longer the supporting stand, the more stably the display is able to be attached.

10

[0081]

[Stand pillar 25 and stand base 29]

15

Referring next to FIGS. 1 to 5, pillar 25 and stand base 29 will be described.

20

Stand pillar 25 is a column-like member having a length that permits formation of an insert space 27 enabling the bar-like portion having a circular cross-section, i.e., the part of stand-cum-joint 23 other than rotational part 23a, to be inserted and removed, and is fixed upright on stand base 29.

[0082]

25

Insert space 27 is a hole having a circular cross section, and supports stand-cum-joint 23 in a manner that it receives stand-cum-joint 23 therein while non-skid/cushioning member

23b of stand-cum-joint 23 abuts the bottom of insert space 27. The diameter of insert space 27 is specified in such a size as to permit stand-cum-joint 23 to be freely inserted and removed and leave a clearance that allows stand-cum-joint 5 23 to rotate about the axis of the longitudinal direction of stand-cum-joint 23.

[0083]

Stand base 29 has dimensions that can support display unit 1 at a predetermined height, by means of stand pillar 10 25 and joint body 15.

[0084]

Next, the operational effect of the above-described stand type thin design television will be illustrated.

To begin with, the first usage mode in which pillar 25 and stand base 29 are used is formed by inserting stand-cum-joint 23 of joint body 15 that is fixed to the backside of display unit 1 into insert space 27 of pillar 25, as shown in (a) to (b) in FIG. 2. Adjustment of the elevation angle X of display unit 1 in this first usage mode can be made as shown in FIG. 3 by rotating first pivot 21 relative to rotational part 23a of stand-cum-joint 23. Adjustment of the direction of display unit 1 in the horizontal direction Y in this first usage mode, can be made as shown in FIG. 4, by rotating display unit 1 in horizontal direction Y, relative to pillar 25, about 15 20 25 the center axis of stand-cum-joint 23, or by rotating

stand-cum-joint 23 in insert space 27, about the longitudinal axis thereof.

[0085]

Next, in the second usage mode in which pillar 25 and stand base 29 are not used, stand-cum-joint 23 is used as the stand for supporting display unit 1, stand-cum-joint 23 is pulled out from insert space 27 of stand pillar 25 by holding grip handle 17, for example, as shown in (b) to (a) in FIG. 2, and display unit 1 is supported by base rails 13 arranged on the bottom surface of display unit 1 and non-skid/cushioning member 23b disposed at the distal end of stand-cum-joint 23, as shown in FIG. 5.

[0086]

Since stand-cum-joint 23 is provided to be longer than the bottom side 1b of display unit 1, the angle of elevation  $X$  of liquid crystal display 3 (the vertical angle of the orientation of liquid crystal display 3) can be adjusted stably by taking a large distance between base rails 13 and non-skid/cushioning member 23b when the angle of stand-cum-joint 23 is adjusted relative to liquid crystal display 3.

[0087]

As described above, since display unit 1 is supported by base rails 13 provided on the undersurface of display unit 1 and stand-cum-joint 23, the display unit 1 can be installed

in a narrow space that affords placement of display unit 1 and stand-cum-joint 23.

Also, since the angle of elevation X is adjusted by stand-cum-joint 23, it is possible to adjust the angle of elevation X of display unit 1 with a simple structure and in a limited space.

Further, without the necessity of stand pillar 25, the display unit can be easily mounted at the height of a table top, etc., and still the angle of elevation X can be adjusted.

10 [0088]

In addition, when, instead of using stand-cum-joint 23 as a stand, grip handle 17 is used as a mounting attachment to wall 31 as shown in FIG. 6, display unit 1 can be used as a wall-mounted TV. In this case, since grip handle 17 is formed in the arc shape, hook 33 engages the topmost position of the arc, so that display unit 1 can be mounted in a stable position without skew.

15 [0089]

When the display in the state shown in FIG. 2(a) is engaged on hook 33 so as to be used as the wall-mounted TV as shown in FIG. 7, stand-cum-joint 23 may be seen projecting below bottom side 1b of display unit 1. In this case, stand-cum-joint 23 is turned about 180 degrees about pivot 21 as shown in FIG. 8 so that stand-cum-joint 23 will not be projected (exposed) below bottom side 1b, hence preventing

the appearance from being marred. Also, when display unit 1 is wall-mounted, it is possible to adjust the angle of elevation of display unit 1 in its wall-mounted state by controlling the amount of rotation of stand-cum-joint 23 about

5 pivot 21.

[0090]

Additionally, since first pivot 21 is positioned at a height lower than the midpoint of display unit 1 with respect to the vertical direction H, stand-cum-joint 23 will not jut out above display unit 1 if stand-cum-joint 23 is turned approximately 180 degrees about pivot 21.

[0091]

In the above description of the stand type thin design television according to the first embodiment, rotation of display unit 1 in horizontal direction Y is achieved by the means of rotating joint body 15 relative to stand pillar 25, however the present invention should not be limited to this. Next, a second embodiment in which display unit 1, joint body 15 and pillar 25 rotate in horizontal direction Y relative to stand base 29 will be described.

[0092]

[The second embodiment]

The second embodiment of the present invention will be described hereinbelow in detail with reference to the drawings. 25 Here, the same components as in the above configuration are

allotted with the same reference numerals so that their description is omitted while the differences from the above configuration will be mainly illustrated. Roughly speaking, the differences from the above embodiment reside in that the 5 cross section of the stand-cum-joint is modified from a circle to an approximate rectangle (FIGS. 9 and 14) while the shape of pillar is modified in accordance with the change of the shape of the stand-cum-joint (FIGS. 9 and 14), that the stand pillar is adapted to be rotatable in the horizontal direction 10 Y relative to the stand base (FIG. 9) and that a remote controller holder for holding a remote controller of display unit 1 is provided for grip handle 17 (FIGS. 15 to 17). The details will be described hereinbelow.

[0093]

15 A stand-cum-joint 35 according to this embodiment includes: a rotational part 35a that is rotatably held on first pivot 21, disposed at the proximal end; and a non-skid/cushioning member 35b for skid prevention and cushioning function, formed of rubber, silicone or the like, 20 at the distal end or at the end opposite to the rotational part 35a, and has a cross section that is long in the direction of the rotational axis (direction of the support shaft) of the first pivot 21, specifically, an approximately rectangular cross section, for example.

25 [0094]

Forming stand-cum-joint 35 so as to have a rectangular cross section that is long in the direction of the rotational axis of first pivot 21 is able to thin the joint body 15 with respect to the depth direction D (FIG. 10) while increasing 5 the stability of supporting display unit 1 in the second usage mode (where the display is separated from the stand pillar). Specifically, in the case of stand-cum-joint 23 of the first embodiment, the contact points with the mounted site in the second usage mode will form an approximately triangular shape, 10 enclosed by base rails 13 and non-skid/cushioning member 23b. On the other hand, in the case of stand-cum-joint 35 of the second embodiment, since the non-skid/cushioning member 35b has a greater dimension in the direction of the rotational axis (the longitudinal direction of the bottom of display 15 unit 1) of first pivot 21 than that of the non-skid/cushioning member 23b, the area enclosed by base rails 13 and non-skid/cushioning member 35b forms a tetragon or trapezoidal shape having a long side defined between base rails 13 and a short side defined by the width of non-skid/cushioning member 20 35b. As a result, if both the stand-cum-joints are set at the same inclination with respect to respective display units 1, the stand-cum-joint 35 can create a greater supporting area for display unit 1, hence providing improved stability.

[0095]

25 As shown in FIGS. 9 and 10, the longitudinal distance

(the distance from the proximal end to the distal end) of the stand-cum-joint 35 is specified so that, with the length of stand-cum-joint 35 set parallel to liquid crystal display 3, its distal end is formed to extend equal to or beyond the 5 bottom side 1b of front frame 1a of display unit 1. In the present embodiment, the distance to bottom side 1b of front frame 1a of display unit 1 is 113 mm and the projected amount from bottom side 1b is about 19 mm. Accordingly, as shown in FIG. 9 which is the front view of the state of FIG. 10(b), 10 stand-cum-joint 35 has a length extended downwards below the base side 1b of front frame 1a.

[0096]

A standpillar 37 of the present embodiment has an elliptic shape in cross section, as shown in FIG. 14 and is formed 15 with an insert space 39 similar to the cross section of stand-cum-joint 35 having an approximately rectangular shape.

[0097]

Insert space 39 is a hollow having an approximately rectangular cross section, and supports stand-cum-joint 35 in a manner that it receives stand-cum-joint 35 therein while 20 non-skid/cushioning member 35b of stand-cum-joint 35 abuts the bottom of insert space 39. The cross section of insert space 39 is sized so that the stand-cum-joint 35 will be freely inserted to and removed from the insert space without suffering 25 any uncomfortable backlash when it is inserted therein.

Accordingly, rotational force acting on display unit 1 in a horizontal direction is transferred to stand pillar 37 by way of joint body 15 and stand-cum-joint 35.

[0098]

5 In order to enable relative rotation in horizontal direction Y, stand pillar 37 and a stand base 45 are formed with fitting part 41 and fitting socket part 43, similar to fitting part 105 and fitting socket part 106 shown in the prior art, and fitting part 41 and fitting socket part 43 are formed so that they engage each other and are able to 10 rotate relative to each other.

[0099]

15 Also, a smoother 47 is provided at the bottom of stand pillar 37 on the side of stand base 45 in order to suppress generation of uncomfortable friction sounds and contact damage during its rotation relative to stand base 45. The material of smoother 47 can be selected as appropriate, taking into account the material of stand base 45; for example, plastics, hard rubber, silicone, and other materials can be used.

20 [0100]

25 In the joint portion between stand pillar 37 and stand base 45, in order to realize smooth rotation of stand pillar 37 and in order to suppress generation of uncomfortable friction sounds and contact damage during the rotation relative to stand base 45, a clearance 49 is formed so as to become greater

as it goes away from the rotational center, i.e., fitting part 41 and fitting socket part 43, as shown in FIG. 9. Here, stand base 45 has dimensions that can support display unit 1 at a predetermined height by means of stand pillar 37 and 5 joint body 15.

[0101]

In the present embodiment, a remote controller holder 51 for holding remote controller 53 of display unit 1 is provided for grip handle 17, as shown in FIGS. 15 to 17. Since display 10 unit 1 of this embodiment can be used separated from pillar 37, there is a risk of remote controller 53 being away from display unit 1, which produces inconvenience. Provision of remote controller holder 51 in grip handle 17 that separates from pillar 37 together with display unit 1, makes it possible 15 to move the display unit with remote controller 53 to another location, it is possible to prevent remote controller 53 from being carelessly mislaid or lost. It should be noted that the shape and position of attachment of remote controller holder 51 are not limited, and it may have any shape, 20 configuration and may be positioned at any place as long as remote controller 53 can be carried together with display unit 1.

[0102]

Up to now, the configuration and operational effects 25 have been described by referring mainly to the differences

of the configuration in the second embodiment, it goes without saying that the operational effects described in the first embodiment can be also obtained.

[0103]

5 It should be also noted that the above-described stand-cum-joint 35 has an elongated, approximately rectangular cross section, long in the axial direction of first pivot 21, and it is not limited to the approximately rectangular shape, but stand-cum-joint 35 may have any shape 10 as long as the rotation of stand-cum-joint 35 can be transferred to pillar 37.

[0104]

15 The first and second embodiments are constructed so that stand-cum-joints 23 and 35 are pulled out from insert spaces 27, 39, respectively. An unillustrated coupling pin for removal prevention of stand-cum-joint 23 or 35 from corresponding insert space 27 or 39 may be provided so as to be inserted into stand-cum-joint 23 or 35 by penetrating 20 through stand pillar 25 or 37. This configuration makes it possible to move display unit 1 as a whole up to stand base 29 or 49, by lifting grip handle 17. However the anti removal means is not limited to insertion of a coupling pin.

[0105]

25 It also goes without saying that the remote controller holder 51 described in the second embodiment can be applied

to the configuration of the first embodiment.

[0106]

[Advantage of the Invention]

As has been described heretofore, according to the present invention, without limitation of the mounting space, the display unit can be efficiently used in various usage modes such that the display may be mounted in a narrow place or moved to a table top or wall-mounted, thus it is possible to provide a highly versatile display apparatus.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig.1]

FIG. 1 is a front view showing the first usage mode of a stand type thin design television according to the first embodiment of the present invention.

[Fig.2]

FIG. 2 is a side view of the stand type thin design television according to the first embodiment of the present invention, (a) showing a state where a display unit 1 is separated from a stand pillar 25, (b) showing a state where display unit 1 and stand pillar 25 are joined.

[Fig.3]

FIG. 3 is a perspective operational illustrative view showing the backside of the stand type thin design television according to the first embodiment of the present invention.

[Fig.4]

FIG. 4 is a top operational illustrative view of the stand type thin design television according to the first embodiment of the present invention.

[Fig.5]

5 FIG. 5 is a perspective view showing the second usage mode of the stand type thin design television according to the first embodiment of the present invention.

[Fig.6]

10 FIG. 6 is a perspective view of the stand type thin design television when display unit 1 is wall mounted, according to the first embodiment of the present invention.

[Fig.7]

15 FIG. 7 is a front view of the stand type thin design television when display unit 1 is wall mounted, according to the first embodiment of the present invention.

[Fig.8]

FIG. 8 is an operational illustrative view showing a stand-cum-joint 23 of the stand type thin design television according to the first embodiment of the present invention.

20 [Fig.9]

FIG. 9 is a front view showing the first usage mode of a stand type thin design television, in a partially cutaway representation, according to the second embodiment of the present invention.

25 [Fig.10]

FIG. 10 is a side view of the stand type thin design television according to the second embodiment of the present invention, (a) showing a state where a display unit 1 is separated from a pillar 37, (b) showing a state where display unit 1 and pillar 37 are joined.

5 [Fig.11]

FIG. 11 is a perspective operational illustrative view showing the backside of the stand type thin design television according to the second embodiment of the present invention.

10 [Fig.12]

FIG. 12 is an operational illustrative view showing a state where the display unit 1 of FIG. 11 is tilted with respect to the direction X of the angle of elevation.

15 [Fig.12]

FIG. 13 is a top operational illustrative view of the stand type thin design television according to the second embodiment of the present invention.

20 [Fig.14]

FIG. 14 is a perspective view showing the second usage mode of the stand type thin design television according to the second embodiment of the present invention.

25 [Fig.15]

FIG. 15 is a front view showing a remote controller holder 51 for holding a remote controller 53 according to the second embodiment of the present invention.

[Fig.16]

FIG. 16 is a sectional view cut on a plane A-A in FIG. 15.

[Fig.17]

5 FIG. 17 is a schematic side view of FIG. 15.

[Fig.18]

FIG. 18 is a front view showing a conventional stand type thin design television.

[Fig.19]

10 FIG. 19 is an illustrative view showing the assembly of a conventional stand type thin design television.

[Fig.20]

FIG. 20 is an illustrative view showing the assembly of a conventional stand type thin design television.

15 [Fig.21]

FIG. 21 is a side view of a conventional stand type thin design television.

[DESCRIPTION OF REFERENCE NUMERALS]

1 display unit

20 1a front frame

1b bottom side

3 liquid crystal display

15 joint body

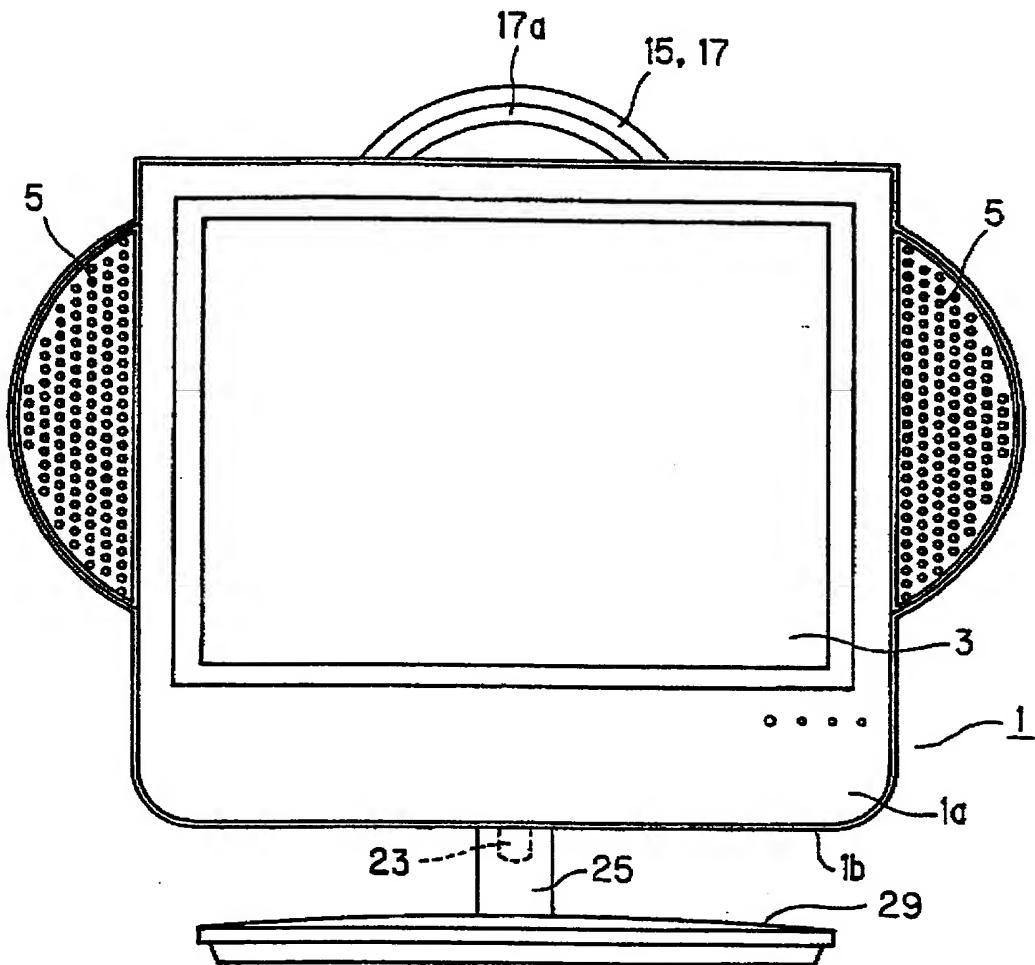
17 grip handle

25 21 first pivot

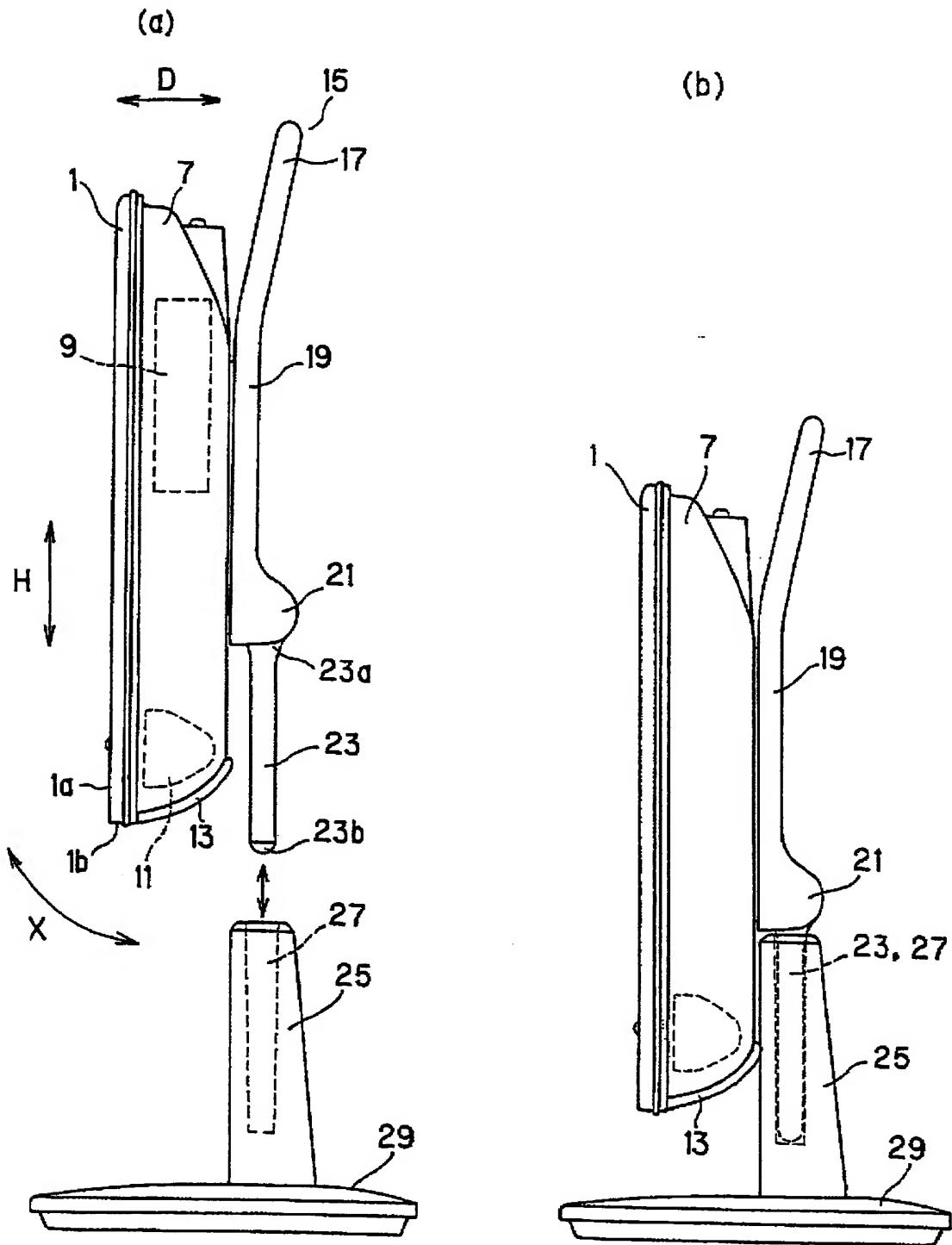
23, 35 stand-cum-joint  
25, 37 stand pillar  
29, 45 stand base  
33 hook  
5 35a rotational part  
51 remote controller holder  
53 remote controller  
X direction of the elevation angle  
Y rotational direction in horizontal direction

[NAME OF DOCUMENT] DRAWINGS

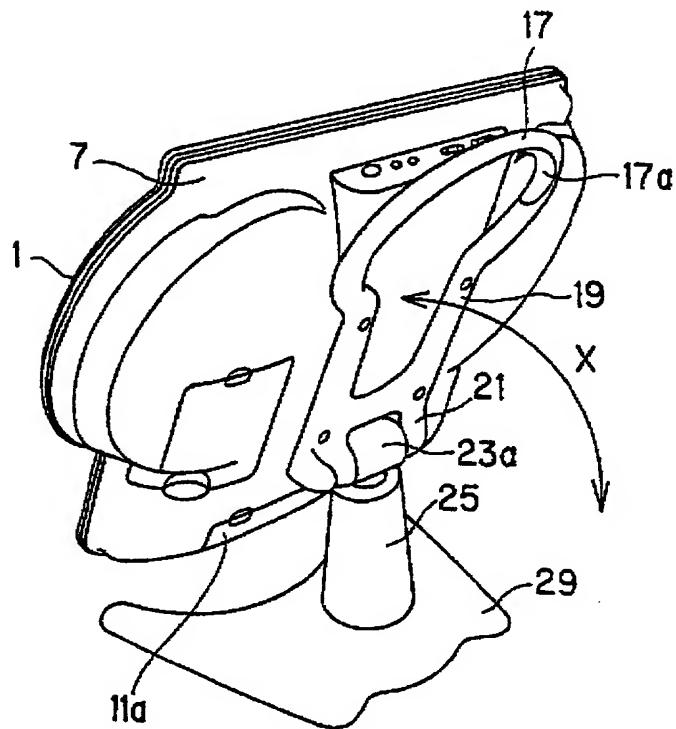
[Fig. 1]



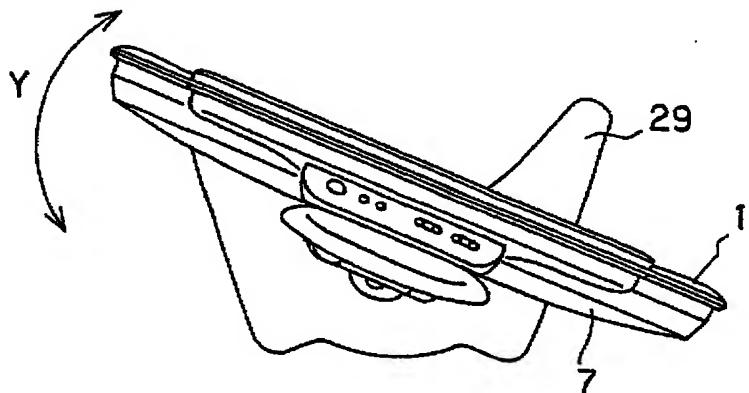
[Fig. 2]



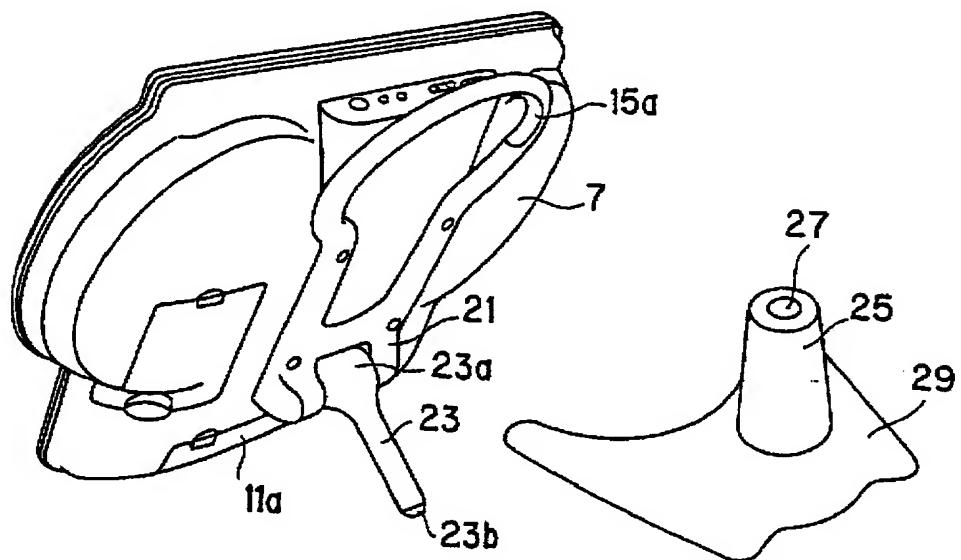
[Fig. 3]



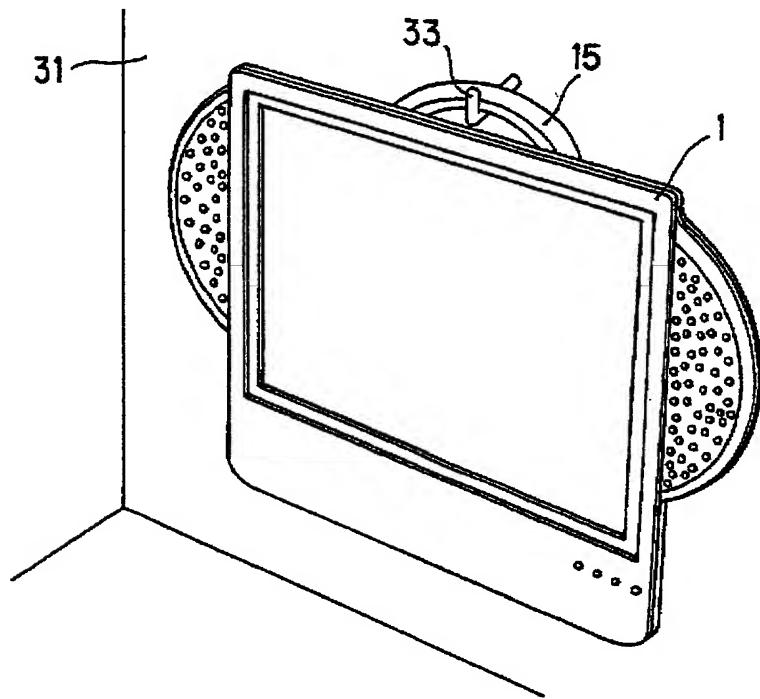
[Fig. 4]



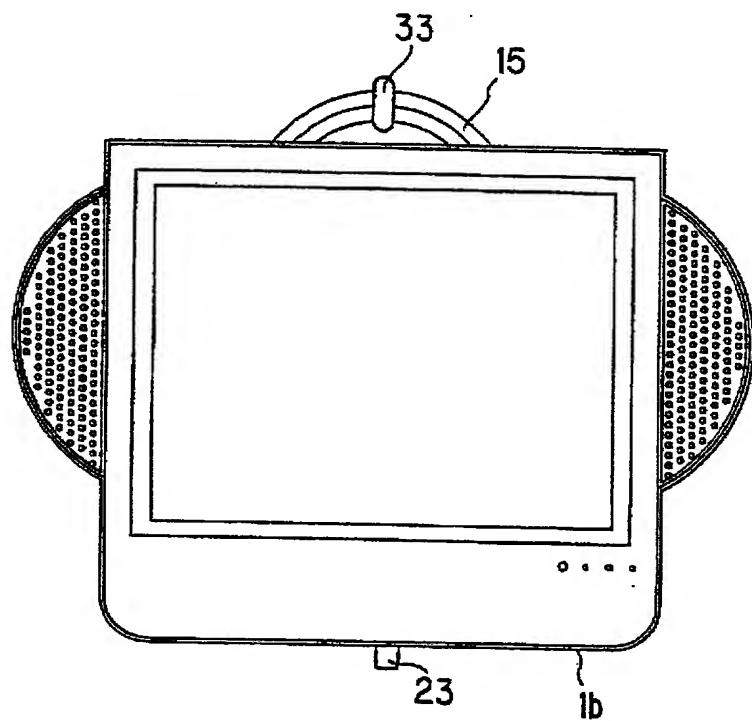
[Fig. 5]



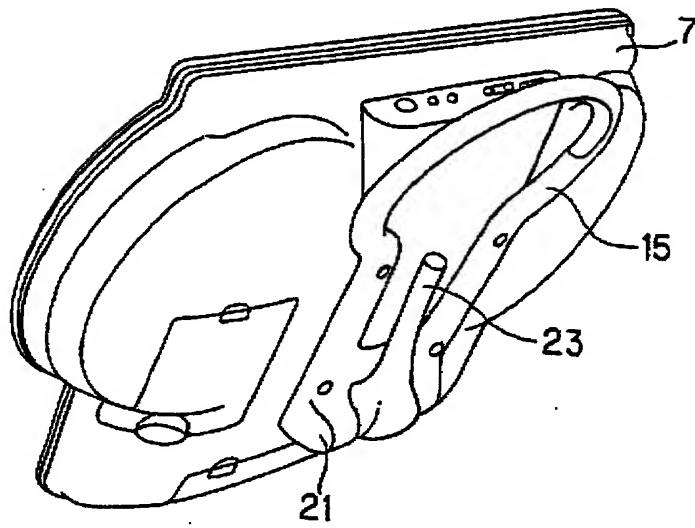
[Fig. 6]



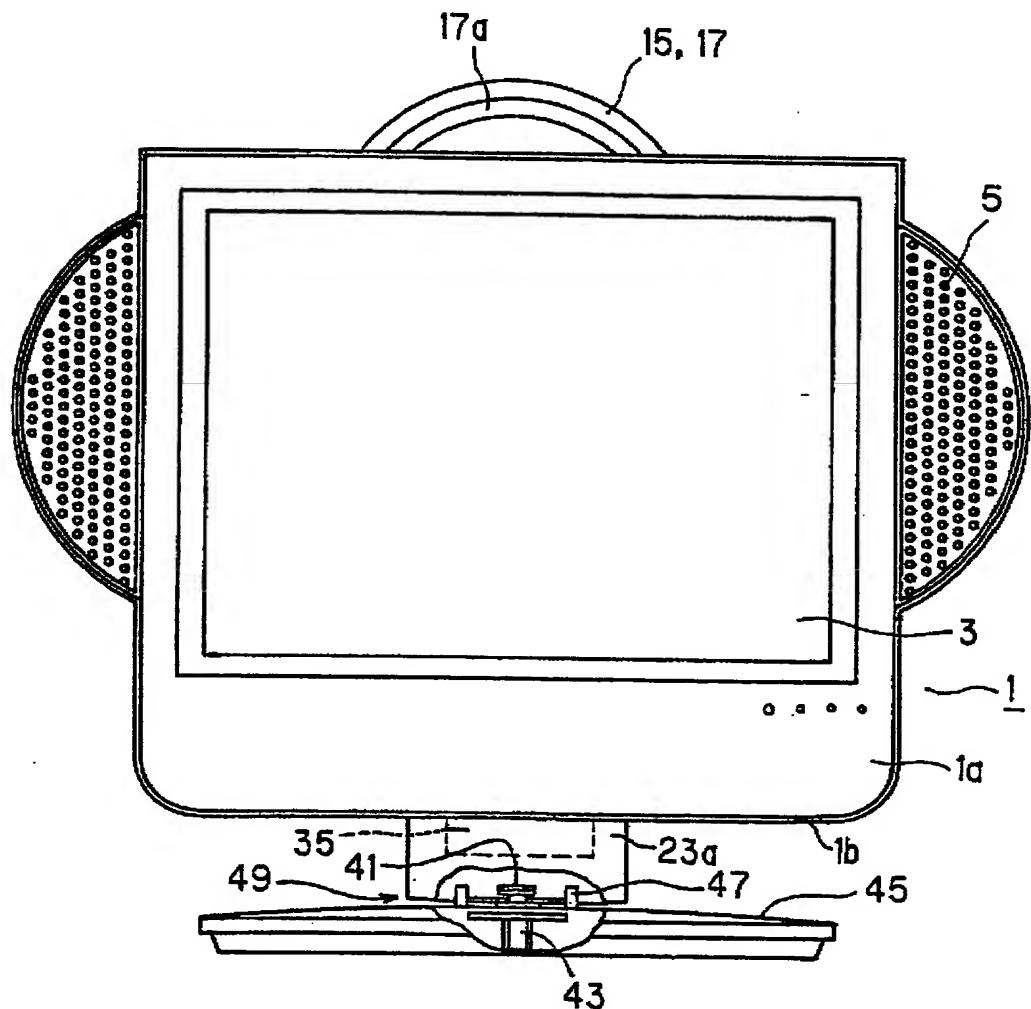
[Fig. 7]



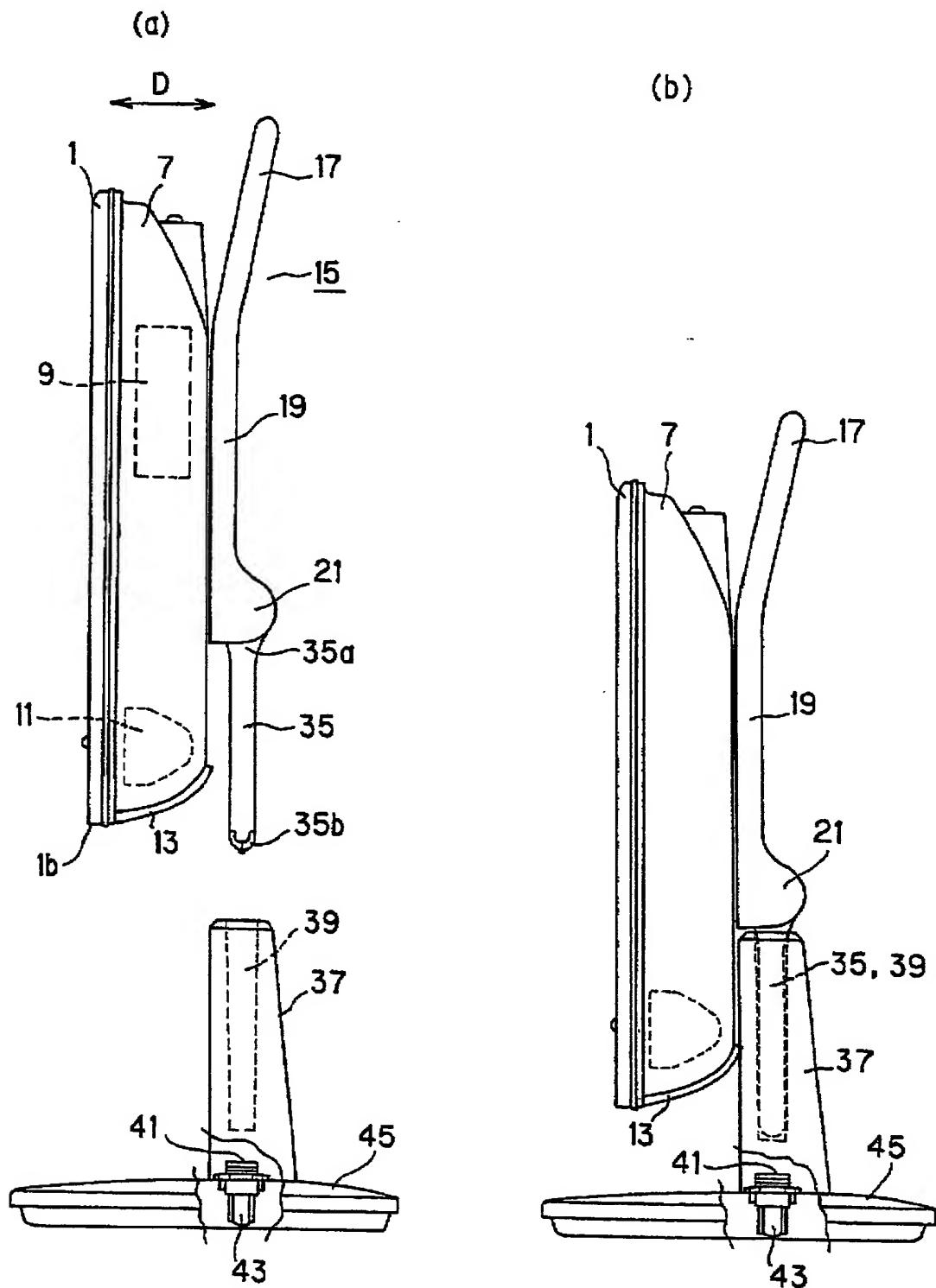
[Fig. 8]



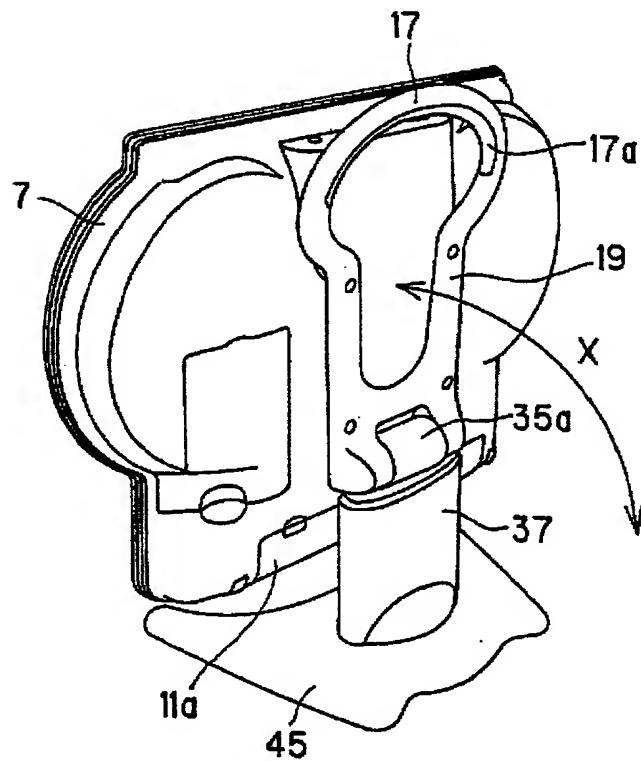
[Fig. 9]



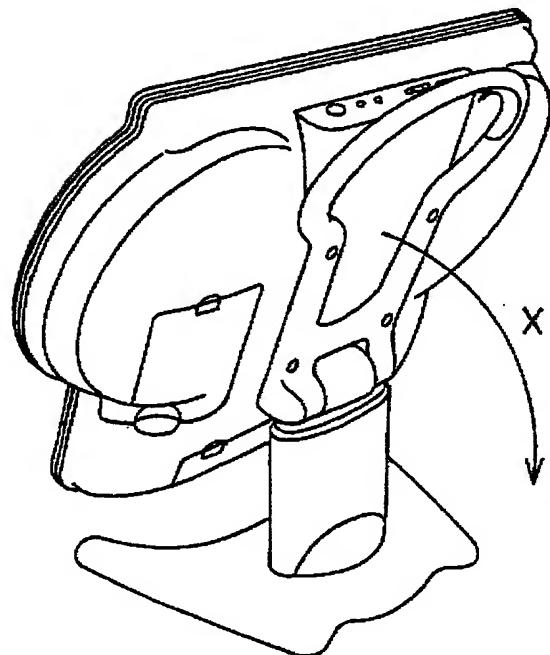
[Fig. 10]



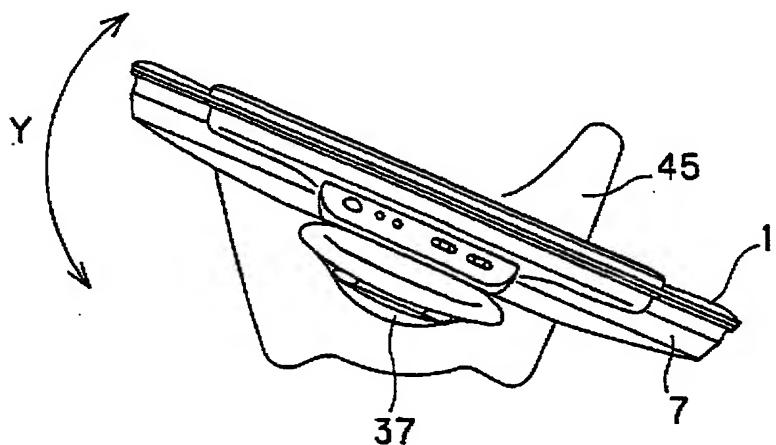
[Fig. 11]



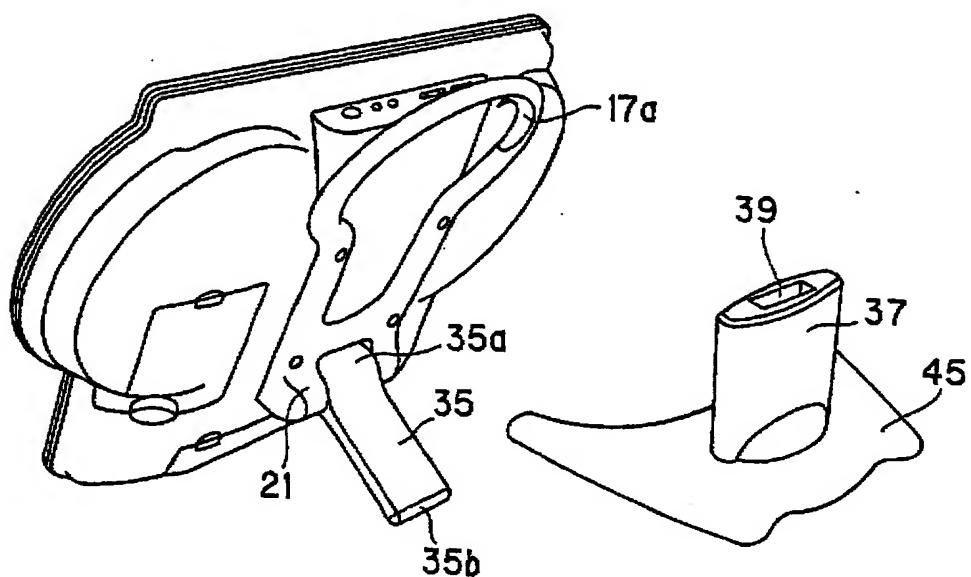
[Fig. 12]



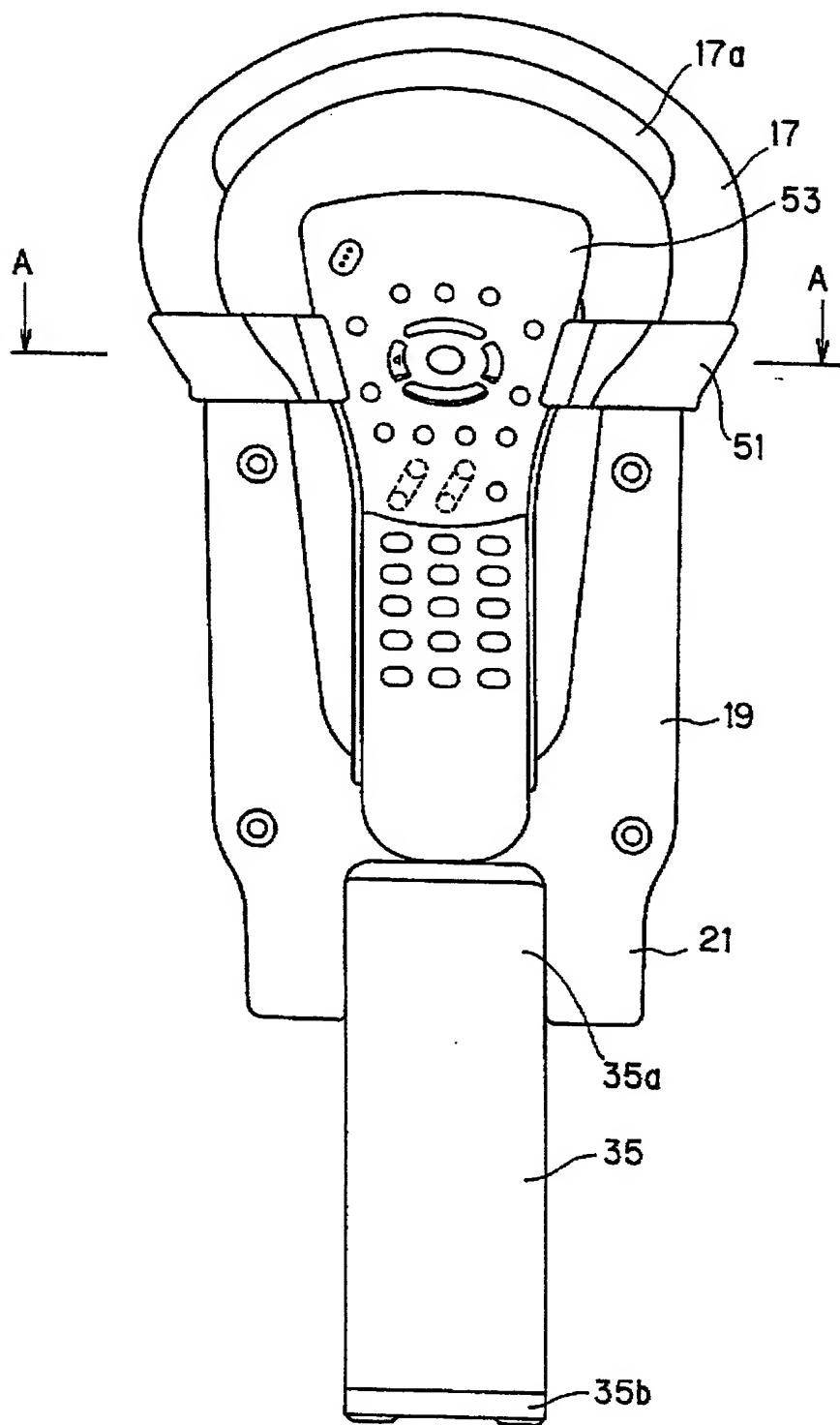
[Fig. 13]



[Fig. 14]



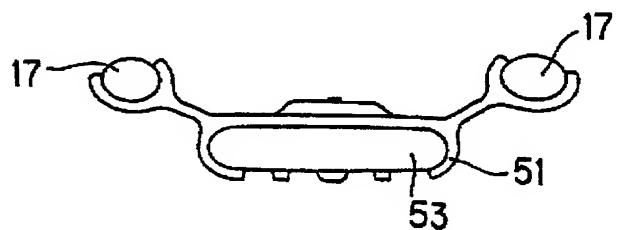
[Fig. 15]



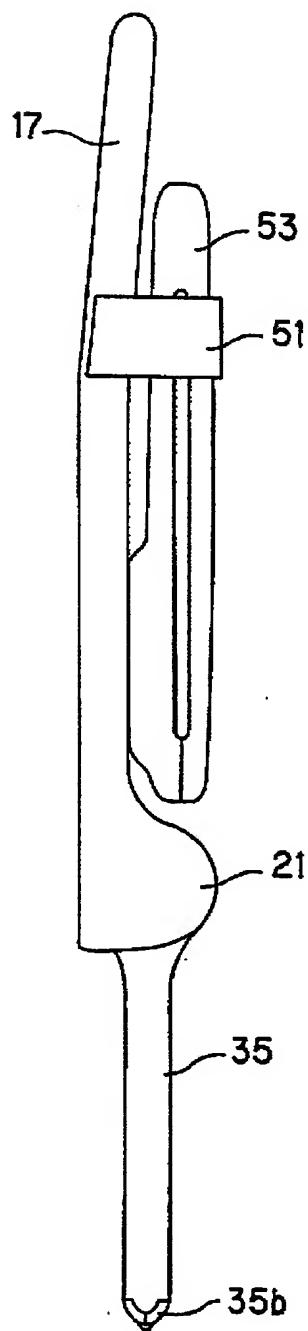
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Filing date: January 9, 2003  
2003-003755 11/ 15

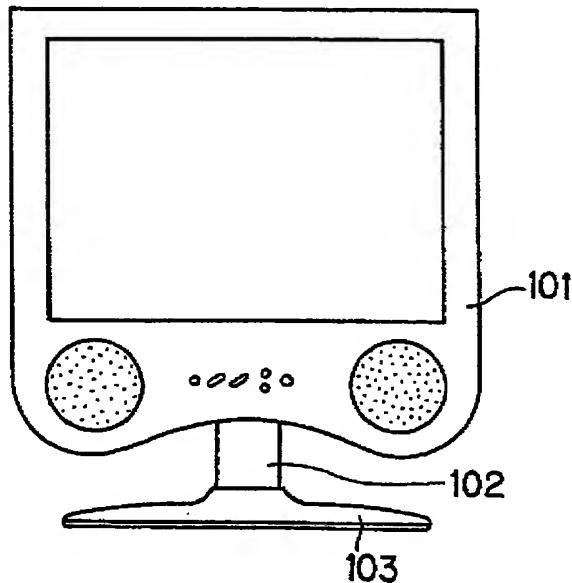
[Fig. 16]



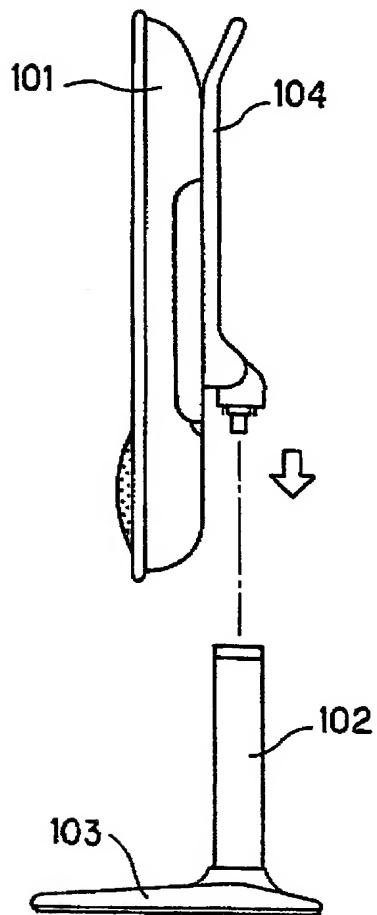
[Fig. 17]



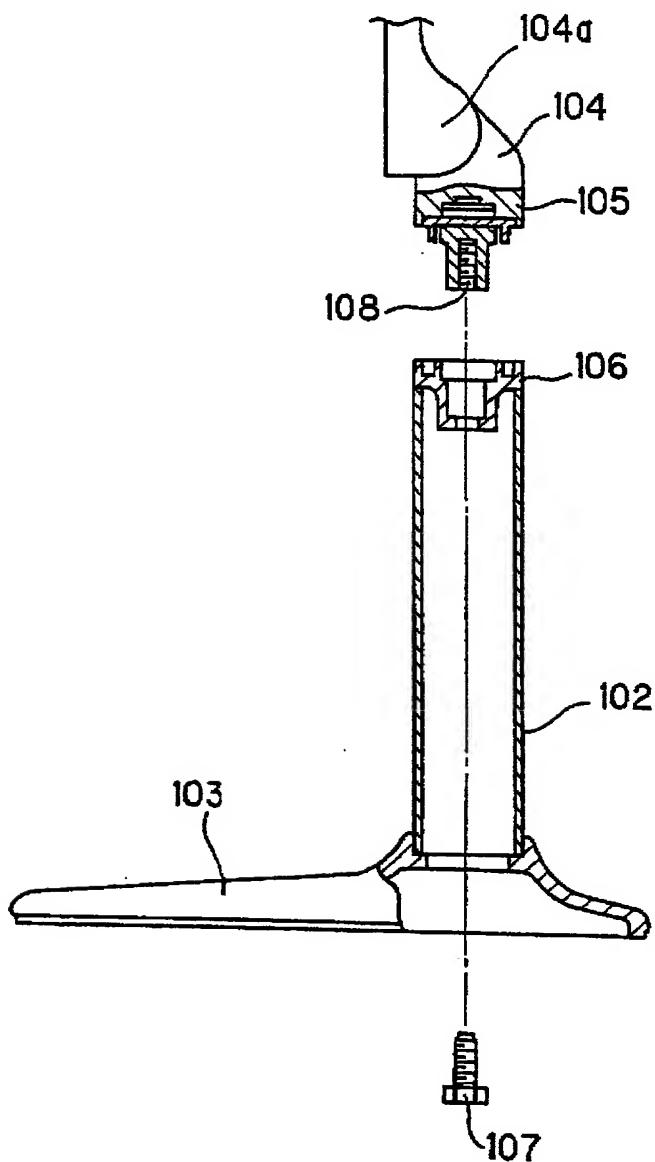
[Fig. 18]



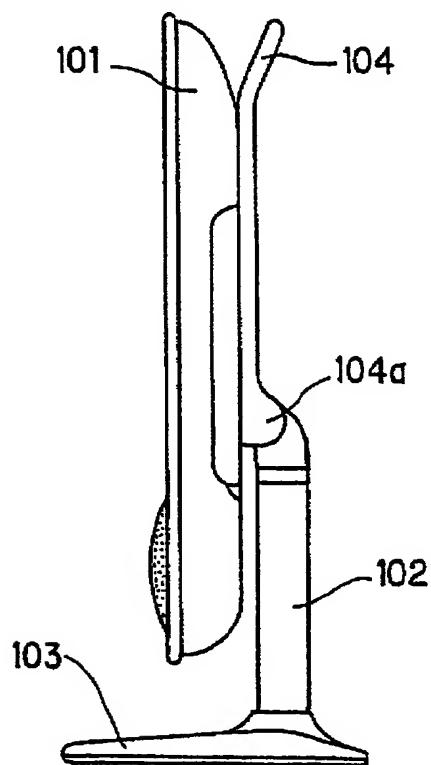
[Fig. 19]



[Fig. 20]



[Fig. 21]



[NAME OF DOCUMENT] ABSTRACT

[ABSTRACT]

[PROBLEM] It is to provide a display monitor, such as a thin design television or the like, in which its display unit is 5 easily attachable and detachable from the stand structure and can be easily carried about, and where the place of installation of the display unit is not limited.

[MEANS FOR SOLUTION] A stand type thin design television includes a display unit 1, a joint body 15, a pillar 25 and 10 a stand base 29. The joint body 15 is attached to the display unit 1 while the joint body 15 is free to be attached to and removed from the pillar 25 that is fixed to the stand base 29. In the first usage mode in which the pillar 25 and the stand base 29 are used, the joint 15 is inserted into the 15 pillar 25. In the second usage mode in which the pillar 25 and the stand base 29 are not used, the joint body 15 itself is used as a stand.

[SELECTED DRAWING] FIG. 2